

AGENDA
CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE (CTCDC)

August 12, 2004 Meeting
Caltrans District 11
2829 Juan Street (Auditorium), San Diego, CA 92110
TIME 9:00 AM

ORGANIZATION ITEMS

- 1. Introduction**
- 2. Approval of Minutes (May 6, 2004 Meeting)**
- 3. Public Comments**

At this time, members of the public may comment on any item not appearing on the agenda. Matters presented under this item cannot be discussed or acted upon by the Committee at this time. For items appearing on the agenda, the public is invited to make comments at the time the item is considered by the Committee. Any person addressing the Committee will be limited to a maximum of five (5) minutes so that all interested parties have an opportunity to speak. When addressing Committee, please state your name, address, and business or organization you are representing for the record.

AGENDA ITEMS

4. Public Hearing

Prior to adopting rules and regulations prescribing uniform standards and specifications for all official traffic control devices placed pursuant to Section 21400 of the California Vehicle Code (CVC), the Department of Transportation is required to consult with local agencies and hold public hearings.

- | | | |
|------|---|--------------------------|
| 00-1 | Bicycle Pavement Marking
(Experiment Agency – City of San Francisco) | (Continued)
(Borstel) |
| 04-4 | MUTCD 2003 Revision No.1 (Pharmacy Signing) | (Introduction)
(Meis) |
| 04-5 | Roundabout signs & Pavement Markings Guidance Proposal | (Introduction)
(Meis) |

5. Request for Experimentation

- | | | |
|-------|---|----------------------------|
| 04-6 | Proposed School Bus Sign, “Do not Pass Stopped School Bus Flashing Red Lights” Increased Fines Apply CVC 22454.5
(Experiment Agency – County of Ventura) | (Introduction)
(Babico) |
| 99-10 | Tactile Pedestrian Indicators
(Final Report Submitted By the City of Los Angeles) | (Continued)
(Fisher) |

6. Discussion Items

02-16 Traffic Signal Warrants 1 & 2
(Footnotes were not included in the 1996 Publication)

(Continued)
(Babico)

04-B Yellow Change Intervals Timing for the Signals

(Introduction)
(Bahodri)

04-C Neighborhood Traffic Safety Program

(Introduction)
(Lott)

7. Information Items

04-D Old Driver's Task Force

(Introduction)
(Meis)

8. Next Meeting

10. Adjourn

ITEM UNDER EXPERIMENTATION

- 99-12 Speed Striping For Smart Crosswalks (Meis)
(Experiment Agency-Caltrans D7)
Status: No update
- 99-13 Illuminated Pavement Markers On Median Barriers (Meis)
(Experiment Agency-Caltrans D7)
Status: The project has not been funded yet.
- 01-3 Pedestrian Countdown Signal Heads (Fisher)
(Citywide Experiment request by the City of Fountain Valley)
Status: The City has submitted their final report to the Committee and has received approval to expand the experimentation as a citywide.
- 01-4 Tactile Pedestrian Indicator With Audible Information (Tanda)
(Experiment request by the City of Santa Cruz)
Status: No update.
- 01-7 Pedestrian Countdown Signal Heads (Tanda)
(Experiment Agency-City of Oakland)
Status: The city has received approval from the FHWA and working to acquire funds in the FY 2002-03 budget.
- 01-9 IN-ROADWAY WARNING LIGHTS AT R/R CROSSINGS (Meis)
(Experiment requests by CPUC in cooperation Kern Co. & City of Fresno)
Status: CPUC is in process to hire consultant firm to conduct a study.
- 02-2 Pedestrian Countdown Signal Heads (Tanda)
(Experiment Agency-City of Berkeley)
Status: No update.
- 02-4 Pedestrian Countdown Signal Heads (Larsen)
(Experiment request by the County of San Luis Obispo)
Status: No update
- 02-15 Radar Guided Dynamic Curve Warning System (Meis)
(Experimentation Agency – Caltrans D5)
- 03-1 Speed Feedback (Radar Speed) Sign (Fisher)
(Experimentation Agency – City of Whittier)
- 03-4 Radar Speed Sign (Borstel)
(Experiment Agency – City of Vacaville)
- 03-5 Radar Speed Sign (Borstel)

(Experiment Agency – City of San Mateo)

- 03-6 Radar Speed Sign (Borstel)
(Experiment Agency – City of San Jose)
Status: City of San Jose planned to conduct the study next fall for the school radar signs that San Jose installed this past fall.
- 03-13 Variable Speed Limit Sign (Borstel)
(Experiment Request by the City of Campbell)
- 03-14 Numbering of Signalized Intersections (Babico)
(Experiment Request by the CVAG)
- 03-15 Radar Speed Sign (Borstel)
(Experiment Request by the City of Fremont)

STATUS OF CALTRANS ACTION ON PAST ITEMS

- Item 01-1 U-TURN SIGNAL HEADS INDICATOR
Caltrans will develop appropriate standards to ensure visibility and make the U-turn signal head indicator an official traffic control device by inclusion in the Caltrans Supplement.
- Item 00-4 USE OF RAISED PAVEMENT MARKERS IN TRANSVERSE PATTERN
Caltrans will take appropriate action on the recommendation made by the Committee.
- Item 02-3 RIGHT EDGELINE
Caltrans will take appropriate action on the recommendation made by the Committee.

Public Hearing**00-1 Bicycle Pavement Marking**

P 1 of 2

**For MUTCD 2003 California Supplement:
Section 9C.103 Shared Lane Marking****Option:**

The Shared Lane Marking, shown in Figure 9C-107, may be used in shared lanes to improve bicyclists' positioning on roadways, encourage cycling in the correct direction, discourage cycling on sidewalks, and to decrease motor vehicle/bicycle conflicts by informing motorists where to expect cyclists, especially on urban and suburban roadways with narrow curb lanes.

Standard:

The Shared Lane Marking shall be placed so that its centerline is a minimum of 3.4 m (11 ft) from the curb face when used on roadways with on-street parking.

Guidance:

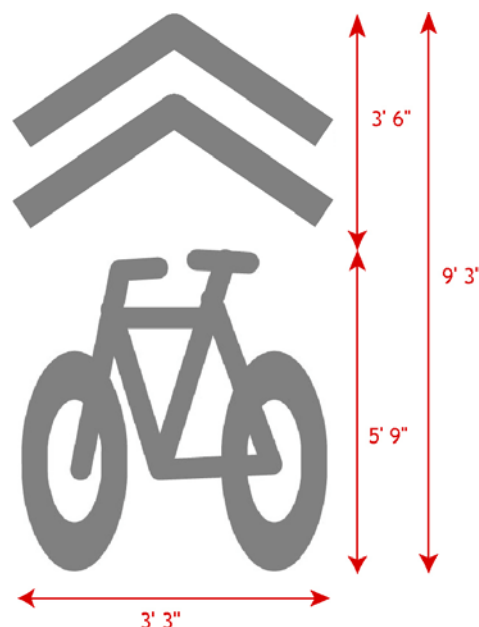
On streets with no on-street parking, the marking should be placed so that it directs cyclists away from conditions alongside the curb face or road edge that compromise cyclists' safety, such as drain grates and longitudinal gutter joints.

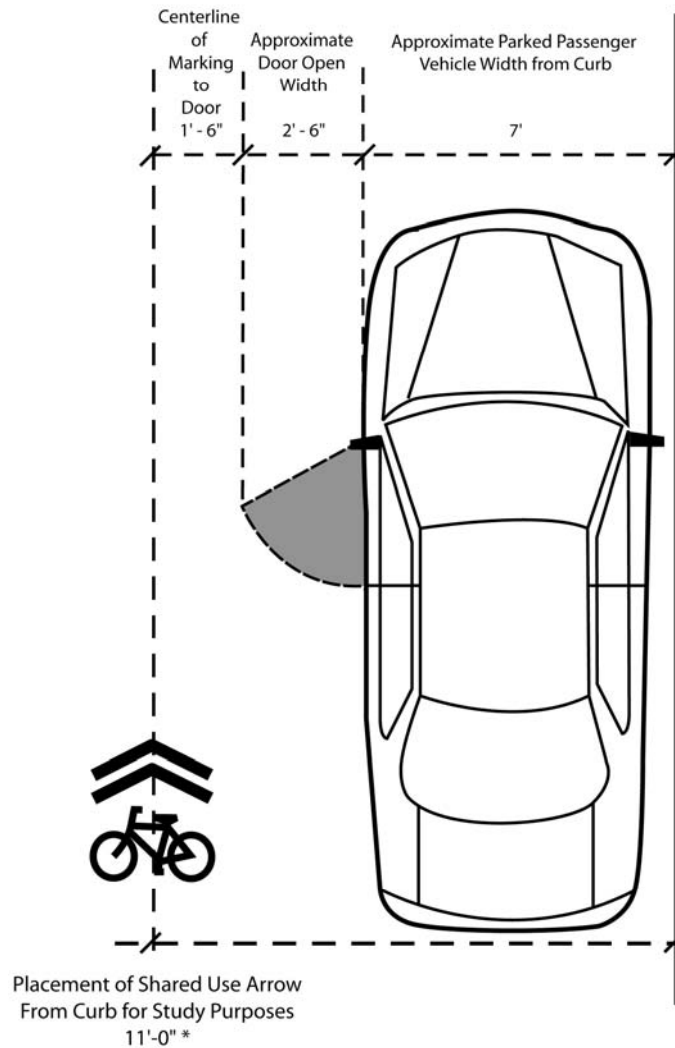
Suggested starting point for spacing markings along roadways with prevailing speeds of 40 kph (25 mph) or less is 75 m (250 ft). Spacing should be increased or decreased based on severity of problems marking is intended to mitigate, prevailing speeds, maintenance issues, etc.

Support:

The optional Shared Lane Marking is intended to improve safety and reduce conflicts on shared roadways, especially those with curb lanes too narrow for motorists and cyclists to safely travel side by side within the lane. It is not intended to supplant bicycle lanes.

Figure 9C-107. Optional Shared Lane Marking





* Selection of this placement is based on the following:
 -- Average car door opens to 9'6" from curb (per DPT field observations),
 -- average width of bicycles 2'
 -- 6" clearance from door to bicycle handlebar is desired minimum shy distance

Placement of Optional Shared Lane Marking Relative to Curb Face on Roadways with On-Street Parking

04-4 MUTCD 2003 Revision No.1 (Pharmacy Signing)

P 1 of 2

Change List for Revision No. 1 of the 2003 Edition of the MUTCD, effective July 21, 2004

This change list was developed to acquaint readers of the 2003 Edition of the Manual on Uniform Traffic Control Devices (MUTCD) with the changes that have been incorporated into the MUTCD with Revision No. 1 by an Interim Final Rule, effective July 21, 2004. This change list compares the 2003 MUTCD with Revision No. 1 incorporated to the original 2003 Edition of the MUTCD, dated November 2003, which was the version that was printed and sold by AASHTO, ATSSA, and ITE.

Note that, in the PDF version of the 2003 Edition of the MUTCD with Revision No. 1 incorporated, a black vertical line and the notation “Rev. 1” in the margin alongside a particular paragraph or figure denotes the location of the changes that have been made with Revision No. 1. All references to Parts, Chapters, Sections, figures, tables, paragraphs, items, and pages in this change list refer to the 2003 MUTCD.

General

The front cover, spine, and inside cover of the MUTCD as well as the cover page of Part 2 have been revised to indicate “Including Revision No. 1 dated July 21, 2004” directly under the words “2003 Edition”.

Part 2 Signs**Chapter 2D Guide Signs – Conventional Roads****Section 2D.45 General Service Signs (D9 Series)**

On page 2D-23, in Figure 2D-11, the D9-20 Pharmacy symbol sign and D9-20a “24 HR” plaque were added.

Also on page 2D-23, the first Standard was revised to remove the list of various legends for various services, making this sentence general in nature.

Also on page 2D-23, the second Standard was expanded to add a second sentence, requiring that the Pharmacy (D9-20) sign shall only be used to indicate the availability of a pharmacy that is open, with a State-licensed pharmacist on duty, 24 hours per day, seven days per week and that is located within 3 miles of an interchange on the Federal-aid system, and a third sentence requiring that the D9-20 sign shall have a 24 HR (D9-20) plaque mounted below it.

Chapter 2E Guide Signs – Freeways and ExpresswaysSection 2E.51 General Service Signs

On page 2E-56, existing item F (Camping) was renumbered to become item G, and a new item F was inserted containing the criteria for general service signing for pharmacies.

Also on page 2E-56, in the last Standard statement on the page, the last sentence of the first paragraph of that Standard was revised to add Pharmacy to the list of services for which one or more legends shall be carried on General Service signs.

On page 2E-57, Figure 2E-42 was revised to add illustrations of alternative examples of D9-18a and D9-18 signs that include the word or symbol for “PHARMACY” in lieu of the word or symbol for “CAMPING”. In these added examples, the exit number is shown as “EXIT 38”. On page 2E-58, the second Option statement on that page was revised to change the parenthetical phrase “(four services)” in the first sentence of this paragraph to “(four or six services)” and to change

P 2 of 2

the final sentence of this paragraph to allow the Pharmacy (D9-20) symbol as well as the Tourist Information (D9-18) symbol to be substituted on symbolic (D9-18) General Service signs in the last position.

Chapter 2F Specific Service Signs

Section 2F.01 Eligibility

On page 2F-1, in the second Standard statement on this page, a new third paragraph was added to require that distances to eligible 24-hour pharmacies shall not exceed 4.8 km (3 miles) in either direction of an interchange on the Federal-aid system.

Also on page 2F-1, in the third Guidance statement on this page, the phrase “other than pharmacies” was added.

On page 2F-2, a new Standard statement was added at the end of Section 2F.01, listing criteria that must be met for a pharmacy to qualify for Specific Service signing if a jurisdiction elects to provide Specific Service signing for pharmacies.

Section 2F.02 Application

On page 2F-2, the first paragraph of the Standard statement of this Section was revised to include 24-hour pharmacy as the first service type that is to be displayed in successive Specific Service signs in the direction of traffic. Also, the first sentence of the second paragraph of this Standard statement was revised to add 24-HOUR PHARMACY to the list of word messages on Specific Service signs.

Also on page 2F-2, the first paragraph of the Option statement of this Section was revised to remove the list of various specific services and make the sentence general in nature.

Section 2H.04 General Design Requirements for Recreational and Cultural Interest Area Symbol Signs

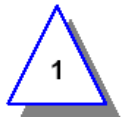
On page 2H-2, in Table 2H-1, in the category of Motorist Services, the 24-Hour Pharmacy symbol was added as new number RM-230.

Section 2H.08 Placement of Recreational and Cultural Interest Area Symbol Signs

On page 2H-9, in Figure 2H-5 (Sheet 2 of 5), the figure was revised to add the 24-hour Pharmacy (RM-230) symbol sign.

04-5 Roundabout Signs & Pavement Markings Guidance Proposal

P 1 of 11

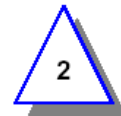
Roundabout Signs & Pavement
Markings Guidance ProposalSection 2C.37 Intersection Warning Signs (W2-1 through W2-6)

The following is added to this section:

Option:

The legend ROUNDABOUT may be used on the W12 (CA) plaque for circular intersections meeting criteria in Section 3B.24.

Editing Note: For the full text of MUTCD 2003 Section 2C.37 and California Supplement, see page 2 of proposal for location of insertion into California Supplement language. See thumbnail at right. Also, Figure 2C-8 is included on top of page 3. Sign specification for W12 (CA) is shown on page 5.

Section 3B.24 Markings for Roundabout Intersections

The following is added to this section:

Guidance:

A solid or broken white line should be used on the outer (right) side of the circular roadway, as follows: A 200 mm (8 in) wide solid line across the splitter island, See Figure 3A-112, Detail 38A, and a 300 mm (12 in) broken white line consisting of 0.9 m (3 ft) segments with 0.9 m (3 ft) gaps across the lane(s) entering the roundabout. See Figure 3A-106, Detail 27D.

Editing Note: For full text of Section 3B.24 of MUTCD, see page 3 for location of insertion of California Supplement language. Proposed Detail 27D is shown on page 10 of this proposal & if approved, will be inserted into Figure 3A-106.



Replace figures 3B-27 & 3B-28 with: Figure 3B-27 (CA) and Figure 3B-28 (CA)

Editing Note: These revised figures show details for the presentation of signs and pavement markings. Each figure requires two sheets. Sheet 1 will show sign placement and details. Sheet 2 provides specific details for pavement markings. These are shown on pages 6-9 of this proposal.



Option:

For roundabout intersections with two-lane approaches, channelizing lines and lane drops for roundabouts may be considered on a case-by-case basis. Solid, white channelizing lines and broken Lane Drop Line for Roundabouts may be considered as shown in Figure 3B-28 (CA). For details on the 200 mm (8 in) wide lines, see Figure 3A-111, Detail 37D and Figure 3A-112, Detail 38A.

Editing Note: Proposed Detail 37D is shown on page 10 of this proposal and if approved, will be inserted into figure 3A-111.



Section 2B.16 Stop and Yield Lines

The following is added to this section: (to existing MUTCD 2003 California Supplement language)

Under last support in Section 2B.16, insert: an “s” to the word ‘layout’ and “, and for roundabouts” between ‘highways’ & the period.

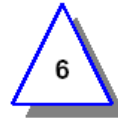


Figure 3B-14 (CA). Examples of Yield Line Layouts

Editing Note:

1) **Keep** the “s” as shown in MUTCD title text see circled information on previous page, and update the figure title with an “s” shown on page 3B-20 (of CA Supplement) in Figure.

2) Provide Yield Lines for Roundabouts detail showing “Direction of Travel” notes with arrows; and, other footnotes as follows:

- Series of white isosceles triangles (next to straight array of triangles beneath the individual detail of the triangle).
- If used, Yield Lines for Roundabouts shall be staggered per the curvature of the circular roadway. The Setback from right edgeline extension for roundabouts is 1.22 m (4 ft). See Figures 3B-27 (CA) and 3B-28 (CA)” placed below the staggered array of isosceles triangles).

3) Proposed replacement for Figure 3B-14 (CA) is shown on page 11 of this package.

MUTCD 2003 language

Section 2C.37 Intersection Warning Signs (W2-1 through W2-6)

Option:

A Cross Road (W2-1) symbol, Side Road (W2-2 or W2-3) symbol, T-Symbol (W2-4), or Y-Symbol (W2-5) sign (see Figure 2C-8) may be used in advance of an intersection to indicate the presence of an intersection and the possibility of turning or entering traffic. The Circular Intersection (W2-6) symbol sign accompanied by an educational TRAFFIC CIRCLE (W16-12p) plaque (see Figure 2C-8) may be installed in advance of a circular intersection.

The relative importance of the intersecting roadways may be shown by different widths of lines in the symbol

An advance street name plaque (see Section 2C.49) may be installed above or below an Intersection Warning sign.

Guidance:

The Intersection Warning sign should illustrate and depict the general configuration of the intersecting roadway, such as cross road, side road, T-intersection, or Y-intersection.

Intersection Warning signs, other than the Circular Intersection symbol (W2-6) sign and the T-intersection symbol (W2-4) sign, should not be used on approaches controlled by STOP signs, YIELD signs, or signals. The Circular Intersection symbol (W2-6) sign should be installed on the approach to a YIELD sign controlled roundabout intersection.

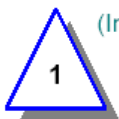
Where the side roads are not opposite of each other, the symbol for the intersection should indicate a slight offset.

Section 2C.37 Intersection Warning Signs (W2-1 through W2-6)

The following is added to this section:

Option:

A bulb shape may be placed on the appropriate leg of the Cross Road (W2-1), Side Road (W2-2 or W2-3), T-Symbol (W2-4), or Y-Symbol (W2-5) advance intersection signs to indicate a “Dead End” condition. See Section 2C.21 for DEAD END (W14-1) sign.



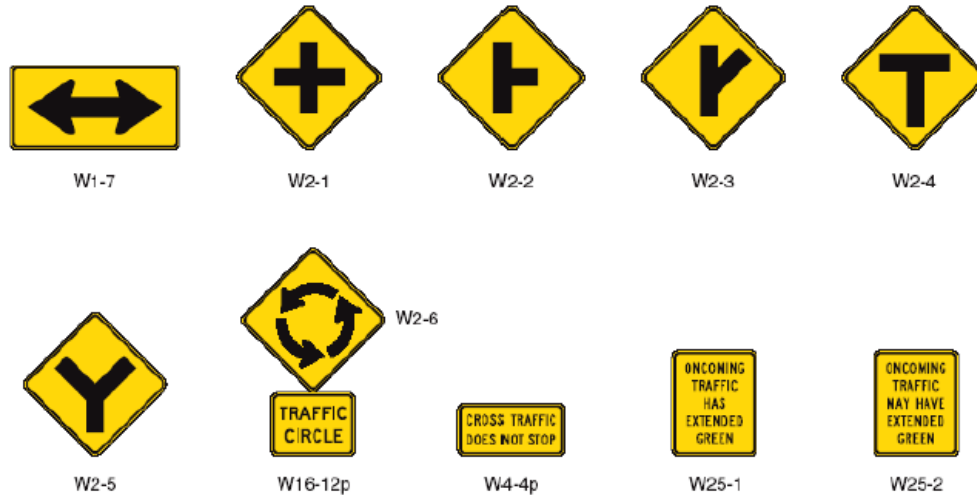
(Insert item 1 into MUTCD 2003 California Supplement)

Currently in “MUTCD 2003 California Supplement”

Page 2C-20

2003 Edition

MUTCD 2003 figure

Figure 2C-8. Intersection Warning Signs

MUTCD 2003 language

Section 3B.24 Markings for Roundabout Intersections**Support:**

Roundabout intersections are distinctive circular roadways that have the following three critical characteristics:

- A. A requirement to yield at entry which gives a vehicle on the circular roadway the right-of-way;
- B. A deflection of the approaching vehicle around the central island; and
- C. A flare or widening of the approach to allow for proper operation as needed.

Examples of markings for roundabout intersections are shown in Figures 3B-27 and 3B-28.

Option:

A yellow edge line may be placed around the inner (left) edge of the circular roadway.

Guidance:

A white line should be used on the outer (right) side of the circular roadway as follows: a solid line along splitter island and a dotted line across the lane(s) entering the roundabout intersection.

Edge line extensions should not be placed across the exits from the circular roadway.

Where crosswalk markings are used, these markings should be located a minimum of 7.6 m (25 ft) upstream from the yield line, or, if none, from the dotted white line.

Option:

Lane lines may be used on the circular roadway if there is more than one lane.

A yield line (see Section 3B.16) may be used to indicate the point behind which vehicles are required to yield at the entrance to a roundabout intersection.

Standard:

Bicycle lane markings shall not be provided on the circular roadway of a roundabout intersection.



(Insert items 2, 3 & 4 of MUTCD 2003 California Supplement)

Section 3B.16 Stop and Yield Lines**Standard:**

If used, stop lines shall consist of solid white lines extending across approach lanes to indicate the point at which the stop is intended or required to be made.

If used, yield lines (see Figure 3B-14) shall consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made.

Guidance:

Stop lines should be 300 to 600 mm (12 to 24 in) wide.

Stop lines should be used to indicate the point behind which vehicles are required to stop, in compliance with a STOP (R1-1) sign, traffic control signal, or some other traffic control device, except YIELD signs.

The individual triangles comprising the yield line should have a base of 300 to 600 mm (12 to 24 in) wide and a height equal to 1.5 times the base. The space between the triangles should be 75 to 300 mm (3 to 12 in).

Option:

Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here to Pedestrians (R1-5 or R1-5a) sign.

Guidance:

If used, stop and yield lines should be placed a minimum of 1.2 m (4 ft) in advance of the nearest crosswalk line at controlled intersections, except for yield lines at roundabout intersections as provided for in Section 3B.24 and at midblock crosswalks. In the absence of a marked crosswalk, the stop line or yield line should be placed at the desired stopping or yielding point, but should be placed no more than 9 m (30 ft) nor less than 1.2 m (4 ft) from the nearest edge of the intersecting traveled way. Stop lines should be placed to allow sufficient sight distance to all other approaches to an intersection.

If used at an unsignalized midblock crosswalk, yield lines should be placed adjacent to the Yield Here to Pedestrians sign located 6.1 to 15 m (20 to 50 ft) in advance of the nearest crosswalk line, and parking should be prohibited in the area between the yield line and the crosswalk (see Figure 3B-15). Stop lines at midblock signalized locations should be placed at least 12 m (40 ft) in advance of the nearest signal indication (see Section 4D.15).

Support:

Drivers who yield too close to crosswalks on multi-lane approaches place pedestrians at risk by blocking other drivers' views of pedestrians.

Section 3B.16 Stop and Yield Lines

The following is added to this section:

Support:

As defined in CVC 377, a "limit line" is a solid white line not less than 300 mm (12 in) nor more than 600 mm (24 in) wide, extending across a roadway or any portion thereof to indicate the point at which traffic is required to stop in compliance with legal requirements.

Standard:

For all purposes, limit line(s) shall mean stop line(s) as referenced in the MUTCD.

A limit line shall be placed in conjunction with STOP (R1-1) signs on paved approaches not controlled by signals.

Guidance:

If a sidewalk exists, the limit line should be placed in advance of an unmarked crosswalk area.

Option:

A limit line may be placed in advance of a crosswalk where vehicles are required to stop, in compliance with a STOP (R1-1) sign, traffic control signal or some other traffic control device.

Support:

If a marked crosswalk is in place, it would normally function as a limit line.

Typical limit line markings are shown in Figure 3B-103.

Standard:

The individual triangles comprising the yield line shall have a base of 0.6 m (2 ft) wide and a height of 0.9 m (3 ft). The space between the triangles shall be 0.3 m (1 ft).

Support:

Figure 3B-14 (CA) shows typical yield line layout for streets and highways.

^s

^, and for roundabouts.

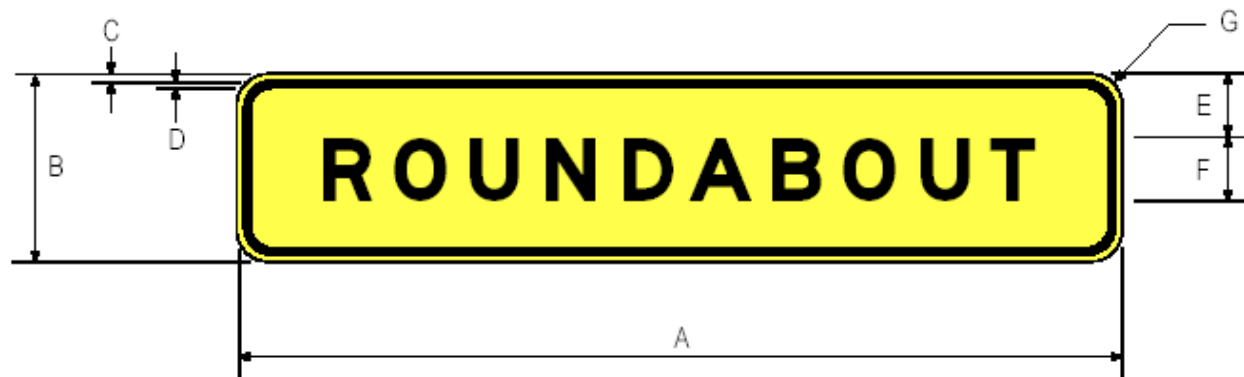
Figure 3B-14. Examples of Yield Line Layouts**Standard:**

MUTCD Figure 3B-14 is deleted and replaced with Figure 3B-14 (CA).



(Insert item 5 edits in existing MUTCD 2003 California Supplement)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



W12 (CA)

ENGLISH UNITS

A	B	C	D	E	F	G
42	12	.25	.25	4	4E	1.5

METRIC UNITS

A	B	C	D	E	F	G
1041	305	6	6	102	100E	38

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - YELLOW (RETROREFLECTIVE)

Figure 3B-27 (CA). Example of Markings for Roundabout Intersections with One-Lane Approaches (Sheet 1 of 2)

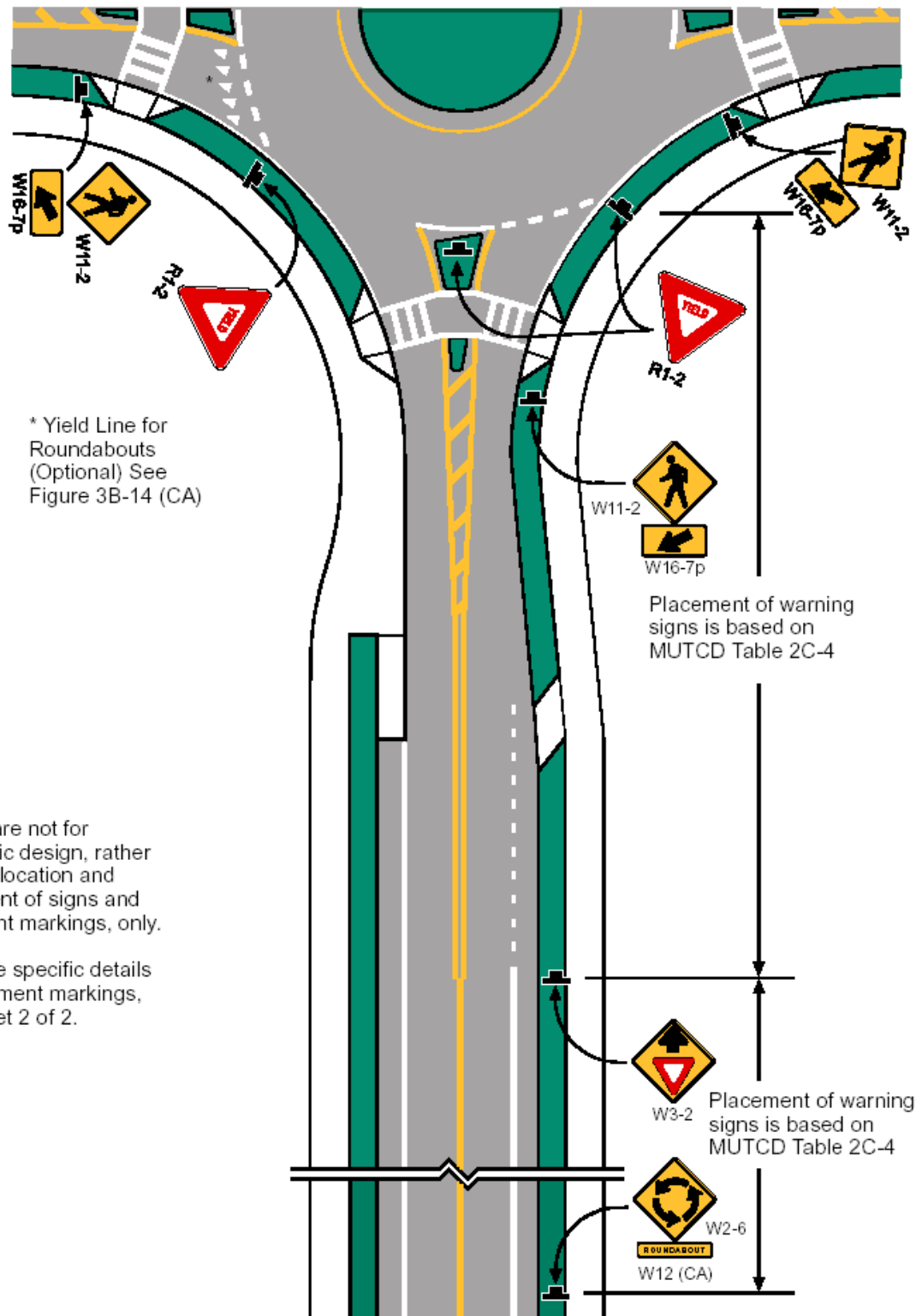


Figure 3B-27 (CA). Example of Markings for Roundabout Intersections with One-Lane Approaches (Sheet 2 of 2)

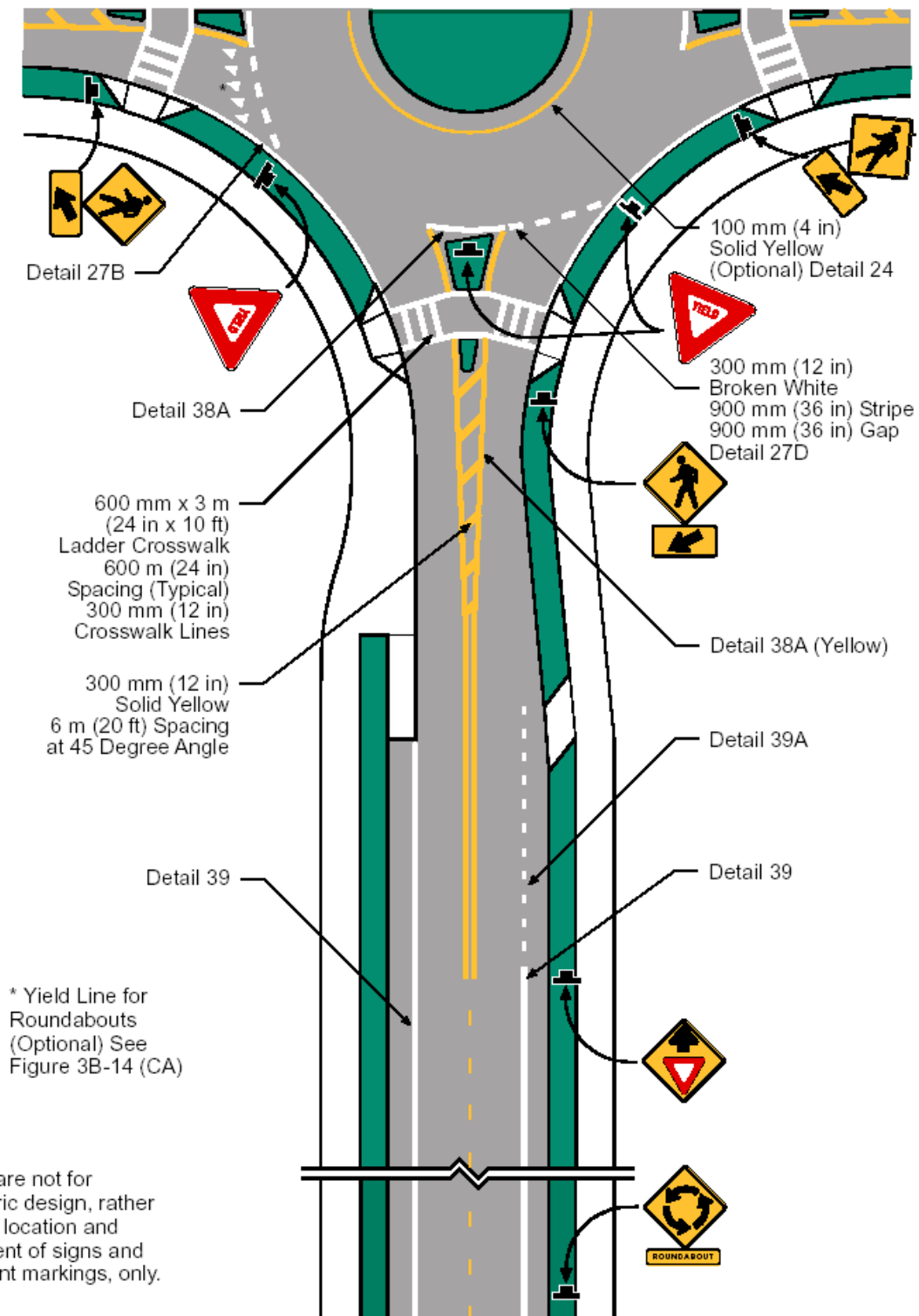


Figure 3B-28 (CA). Example of Markings for Roundabout Intersections with Two-Lane Approaches (Sheet 1 of 2)

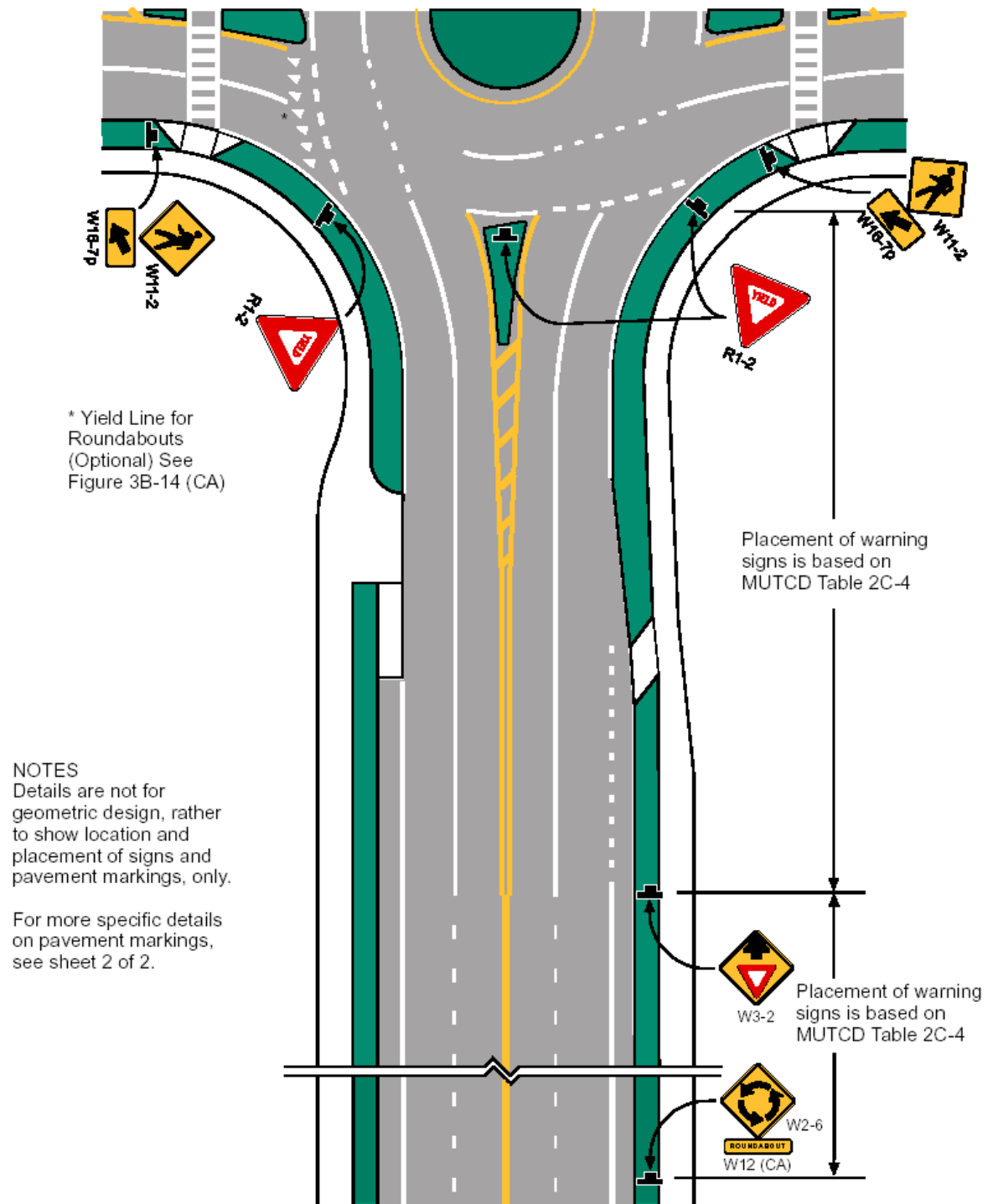
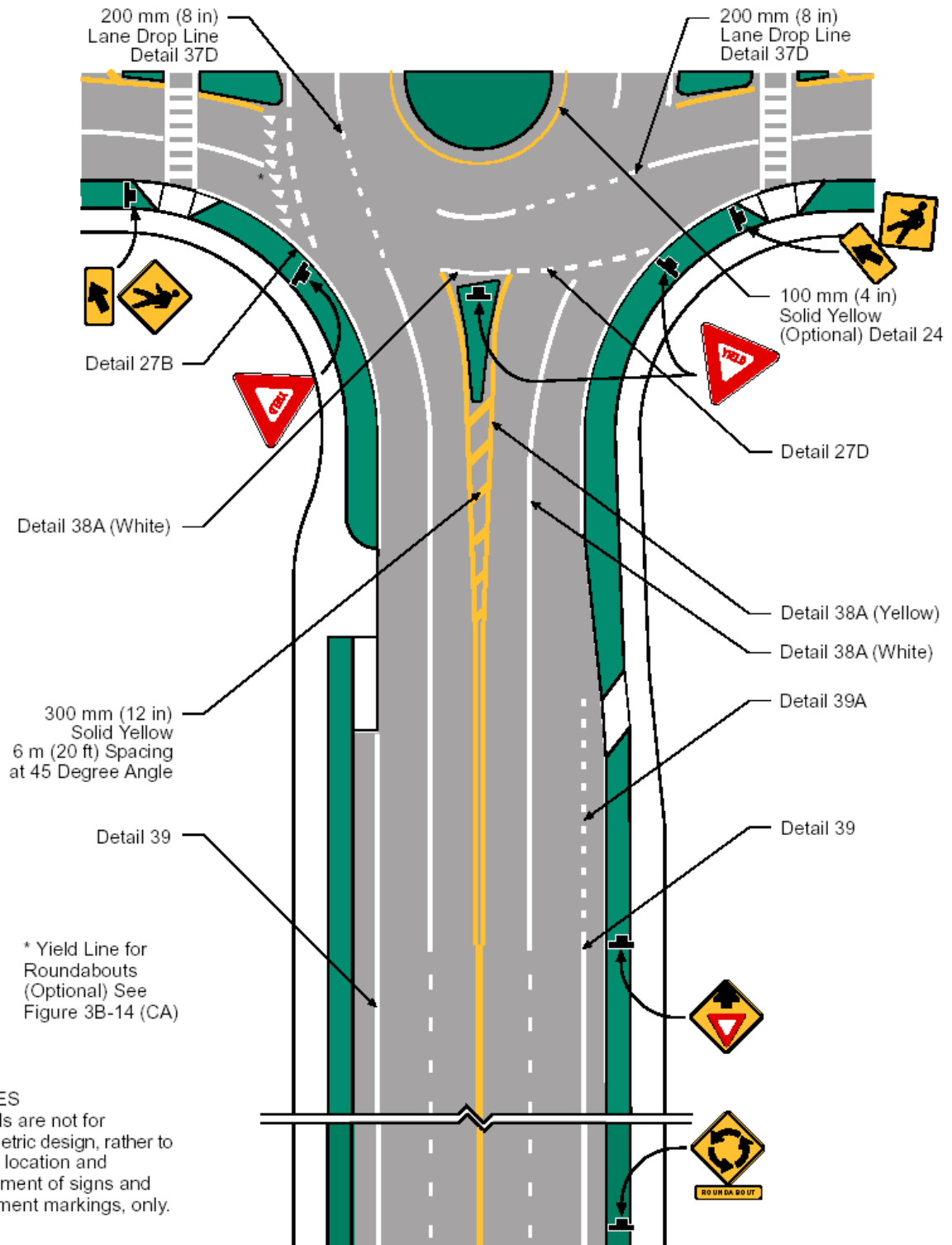


Figure 3B-28 (CA). Example of Markings for Roundabout Intersections with Two-Lane Approaches (Sheet 2 of 2)

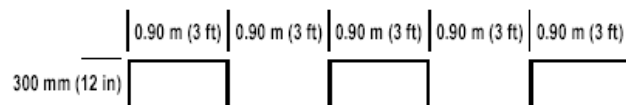


**Figure 3A-106. Right Edge Line and Right Edge Line Extension
Through intersections**

(Detail to be added to existing figure)

DETAIL 27D

**Right Edge Line Extensions
For Roundabouts**



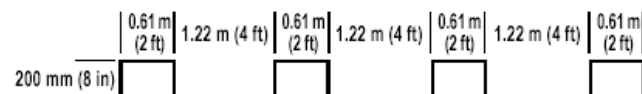
Right Edge Line Extensions For Roundabouts
pattern for use to delineate the right edgeline of
the circular roadway across the lane(s) entering
the roundabout.

Figure 3A-111. Lane Drop Markings

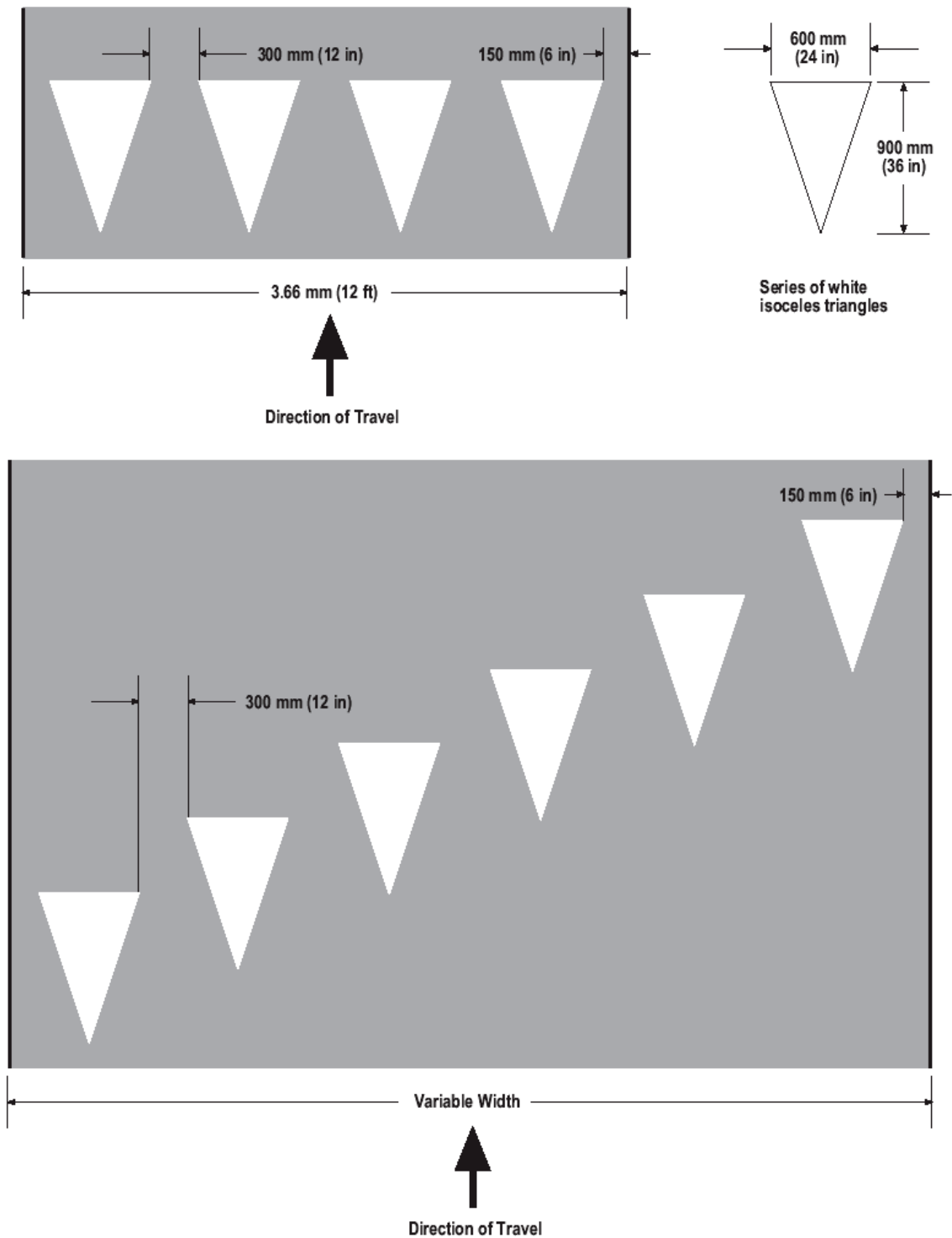
(Detail to be added to existing figure)

DETAIL 37D

**Lane Drop Line
For Two-Lane Roundabouts**



Lane Drop Line For Two-Lane Roundabouts
pattern for use on mandatory exiting lanes from
a two-lane roundabout.

Figure 3B-14 (CA). Examples of Yield Line Layouts

NOTE: If used, Yield Lines for Roundabouts shall be staggered per the curvature of the circular roadway. The setback from the right edge line extension for roundabouts is 1.22 m (4 ft). See Figures 3B-27 (CA) and 3B-28 (CA).

Request For Experimentation**04-6 Proposed School Bus Sign, "Do Not Pass Stopped School Bus, Flashing Red Lights" Increased Fines Apply CVC 22454.5**

P 1 of 2

**PUBLIC WORKS AGENCY**
RONALD C. COONS
Agency Director

May 18, 2004

Jacob Babico
Chief-Traffic Division
San Bernardino County
Transp. & Flood Control Dept.
825 E. 3rd St., Room 115
San Bernardino, CA92415-0835

Transportation Department
Wm. Butch Britt, Director
Water Resources & Development Department
John C. Crowley, Director
Central Services Department
Lane B. Holt, Director
Environmental & Energy Resources Department
Kay Martin, Director
Watershed Protection District
Jeff Pratt, Director
Engineering Services Department
Alec T. Pringle, Director

SUBJECT: PROPOSED SCHOOL BUS SIGN

Dear Mr. Babico:

The Ventura County Transportation Department requests that you serve as sponsor for our proposal to install school bus signs along a six-mile stretch of Santa Rosa Road at the request of the Santa Rosa Valley residents in Ventura County. The residents would like the sign installed at regular intervals to remind drivers that they are required to stop when traveling in either direction. Drivers frequently fail to do so. The California Highway Patrol has limited resources to conduct enforcement on Santa Rosa Road. The signs are part of an effort to educate drivers to comply with the provisions of the California Vehicle Code.

A layout of the proposed sign was developed in order to present this concept to CTCDC. A sample is enclosed. The size of the sign will be 36" by 48" along the horizontal axis. Although the exact color scheme has not been determined, it is our intention to use something very similar to the color scheme shown on the attached sample, which was based on a sign used in the Province of Ontario in Canada. However, we would welcome any suggestions that the CTCDC may offer. The signs would be installed outside the paved shoulders of Santa Rosa Road at approximately 1-mile intervals. There would be a total of ten signs installed, five for each direction of traffic.

We appreciate your willingness to be the sponsor. It would be appreciated if you could confirm the August 12 date for the next CTCDC meeting in San Diego. I plan to attend the meeting and will need to know the time and location.

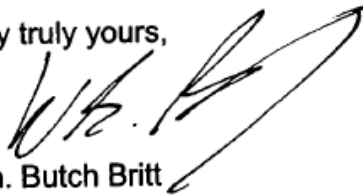


P 2 of 2

Jacob Babico
May 18, 2004
Page 2

If you have questions, you may contact me at (805) 654-2077 or Nazir Lalani at (805) 654-2080.

Very truly yours,



Wm. Butch Britt
Director
Transportation Department

**DO NOT PASS
STOPPED SCHOOL BUS
FLASHING RED LIGHTS**

**INCREASED FINES APPLY
CVC 22454.5**

99-10 Tactile Pedestrian Indicators

P 1 of 3

WAYNE K. TANDA
GENERAL MANAGER

CITY OF LOS ANGELES

CALIFORNIA



JAMES K. HAHN
MAYOR

DEPARTMENT OF
TRANSPORTATION

221 N. FIGUEROA STREET, SUITE 500
LOS ANGELES, CA 90012
(213) 580-1177
FAX: (213) 580-1188

May 18, 2004

Mr. Devinder Singh, P.E.
Executive Secretary
California Traffic Control Devices Committee
California Department of Transportation
Traffic Operations MS 36
1120 "N" Street
P.O. Box 942874
Sacramento, CA 94274

RE: FINAL REPORT ON TACTILE PEDESTRIAN INDICATOR (TPI)
EXPERIMENTATION IN THE CITY OF LOS ANGELES (ITEM 99-10)

Dear Mr. Singh:

Attached please find the Final Report on Tactile Pedestrian Indicator (TPI) Experimentation in the City of Los Angeles. This Final Report brings closure to the experimentation initiated by the City of Los Angeles, Department of Transportation (LADOT) and approved by the California Traffic Control Devices Committee (CTCDC) at its November 19, 1999 meeting (Item 99-10).

This Final Report presents the findings and conclusions reached by the LADOT since our Initial Update Report to the CTCDC (dated October 27, 2000), Status Report to the CTCDC (dated January 18, 2002), and Special Presentation at the CTCDC Accessible Pedestrian Signals Sub-Committee Meeting (March 12, 2003).

In summary, LADOT believes that the TPI technology is a viable alternative to the current State-recommended audible Cuckoo/Peep-Peep unit. The TPI units field installed in the City of Los Angeles thus far have gained acceptance by the affected blind communities and addressed traffic engineering safety and environmental challenges associated with the current audible units.

Current issues involve the reliability and maintenance considerations of the TPI units, uniform standards and specifications for the manufacture of TPI products, functional expectations of the blind communities on TPI products, and new voice-programmable universal devices that incorporated TPI as part of the new features.

Because these current issues are on-going, and with the expected California Supplement to the 2003 Manual of Uniform Traffic Control Devices (MUTCD) we believe that LADOT's 1999 pioneering work on the TPI technology has reached its end. Many of our engineering criteria and considerations have already been incorporated in the 2003 MUTCD, while the new technology is continually being explored and examined by all parties concerned.

On behalf of the LADOT, I wish to thank the CTCDC during our experimentation of TPI devices.

Very Truly Yours,

Verej Janoyan, P.E.
Senior Transportation Engineer
ATSAC Operations Division

FINAL REPORT TACTILE PEDESTRIAN INDICATOR

INTRODUCTION / OBJECTIVE

Prior to 1994, a total of five signalized intersections were equipped with audible pedestrian signals in the City of Los Angeles. The locations chosen for the audible pedestrian signal installations was made solely on their proximity to the Braille Institute. At its November 19, 1999 meeting, the California Traffic Control Devices Committee (CTCDC) approved experimentation by the City of Los Angeles, Department of Transportation (LADOT) relative to the deployment and subsequent analysis of Tactile Pedestrian Indicators (TPI) for the purpose of safer pedestrian street crossings for the visually impaired.

The TPI experimentation was envisioned to have a two-fold objective: provide feedback to a visually impaired person as to (1) when and (2) where to make safer street crossings. Because LADOT believed that the vibro-tactile feature of the TPI device (vibrating directional arrows) could have been the solution to accommodate these situations, the when to begin crossing was analyzed where traffic sounds were intermittent and masked. The where to begin crossing was analyzed for crossings straight across the street where there was no acoustic parallel traffic to indicate the direction of crossing.

TPI FIELD IMPLEMENTATION

Since November 1999, there have been a total of 20 intersections and 34 pedestrian crossings equipped with 68 TPI devices. The primary reasons for the TPI installations were that actual directions of pedestrian crossings at complex intersections can be best pin-pointed by the vibro-tactile arrows. It was also believed that the vibro-tactile arrows offered an opportunity to assist the visually impaired pedestrians while not generating additional noise to adjacent businesses and residents. It should be noted that all TPI locations were selected jointly by LADOT engineers and certified orientation and mobility specialists affiliated with the Southern California Association of Orientation and Mobility Specialists (SCAOMS).

USER REACTIONS

In a late 2002 LADOT post-installation opinion survey, which was accomplished with help from the staff of Braille Institute, 67 of 72 of Braille Institute visually-impaired attendees indicated that the TPI devices installed were helpful to them. Those surveyed also indicated that TPI devices would be an acceptable alternative to the current State-recommended Cuckoo/Peep-Peep audible devices. One of the major comments received was that these TPI devices would have been even more useful had more visually impaired pedestrians been informed of the location of the TPI devices. In general, the TPI devices implemented have received favorable input by the visually impaired and the goals that we set out to achieve have had limited success.

However, the benefits of these installations would be more far-reaching if the visually impaired pedestrians knew where these TPI devices have been installed. Where the existence of TPI devices were known, the visually impaired indicated that these devices provided the needed information relative to their need to know when to begin crossing and where the signalized crosswalk was located.

COST

The original 68 TPI devices were installed for approximately \$300 per unit. The subsequent replacement of 60 units, that failed within two (2) years, showed an 11 percent cost increase. This price tag does not include LADOT labor costs relative to the design, installation and maintenance of the devices. The devices were often vandalized to the extent that the vibrating arrows were removed or jammed into the housing assembly and thus did not provide meaningful information as to the location of the intended crosswalk. In response to this, LADOT purchased, for testing, three separate TPI devices in 2001 that feature fixed locator tones, two-sound-level locator tone settings and an automatically adjustable ambient tone locator. Depending on the model chosen, the unit price varies from \$350 to \$450.

Bench evaluation studies of the three TPI locator tone devices indicated that all performed as advertised and could be used as replacements for the earlier installations. However, the vandalism susceptibility problem was still an issue. It was also found that the fixed-sound model was the most economical. The automatic ambient noise adjuster model was found to be fragile with possible reliability problems.

Subsequent to the purchase of replacement units, the TPI device product line was discontinued. The vendor now markets a product known as the Navigator, which integrated the TPI and locator tone features with the Cuckoo/Peep-Peep audible signal feature and its newest programmable verbal message feature. The latter feature allows for programmed sentences, such as "walk sign is on crossing Main Street". A single Navigator unit was purchased and bench tested. The Navigator device unit demonstrated shortcomings in functional and field installation areas. Results of the bench test were shared with the manufacturer who plans to address the problem areas in their next model.

FINAL REMARKS AND CONCLUSIONS

The existing TPI devices field deployed in the City of Los Angeles are now facing major maintenance problems, since the vendor has discontinued all of its current TPI product line and the currently available Navigator is not considered a viable alternative. The continuation of the LADOT test bed is impractical since the installed products have been rendered obsolete through the discontinuation of TPI products.

As the result of this TPI Experiment, LADOT urges the adoption of uniform statewide TPI standards and specifications. As a statewide issue, Caltrans may wish to conduct more device-testing efforts so that the local agencies can benefit from a future statewide guidance and utilize a common standard.

We conclude through this experimentation the following:

- TPI installation is helpful to the visually impaired
- Tone locators are needed to alert the visually impaired of the TPI locations
- Further TPI technology must be accomplished to remedy the existing maintenance problems
- Caltrans should initiate TPI standards and specifications to ensure field reliability and durability

Discussion Items

02-16 Traffic Signal Warrants 1 & 2

"CTCDC to discuss to revise MUTCD Section 4C.01 to reflect the language stipulated in Caltrans Manual Footnote published in January 1991".

MUTCD 2003, Section 4C.01

Option:

At an intersection with a high volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher of the major-street left-turn volumes as the "minor street" volume and the corresponding single direction of opposing traffic on the major street as the "major-street" volume.

For signal warrant analysis, bicyclists may be counted as either vehicles or pedestrians.

1991 Traffic Manual

WARRANT 1 - Minimum Vehicular volume

100% SATISFIED YES ☐ NO ☐
80% SATISFIED YES ☐ NO ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)		MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)		Hour
	U	R	U	R	
Both Approchs.	500	350	600	420	
Major Street	(400)	(280)	(480)	(336)	
Highest Approach.	150	100	200	140	
Minor Street *	(120)	(84)	(160)	(112)	

* NOTE: Heavier left turn movement from Major Street included when LT-phasing is proposed ☐

WARRANT 2 - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☐
80% SATISFIED YES ☐ NO ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)		MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)		Hour
	U	R	U	H	
Both Approchs.	750	525	900	530	
Major Street	(600)	(420)	(720)	(504)	
Highest Approach.	75	53	100	70	
Minor Street *	(60)	(42)	(80)	(56)	

* NOTE: Heavier left turn movement from Major Street included when LT-phasing is proposed ☐

WARRANT 3 - Minimum Pedestrian Volume

100% SATISFIED YES ☐ NO ☐

REQUIREMENT	FULFILLED
Pedestrian volume crossing the major street is 100 or more for each of any four hours or is 150 or more during any one hour; and	Yes <input type="checkbox"/> No <input type="checkbox"/>
There are less than 60 gaps per hour in the major street traffic stream of adequate length for pedestrians to cross; and	Yes <input type="checkbox"/> No <input type="checkbox"/>
The nearest traffic signal along the major street is greater than 500 feet; and	Yes <input type="checkbox"/> No <input type="checkbox"/>
The new traffic signal will not seriously disrupt progressive traffic flow on the major street	Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a warrant is not necessarily justification for a signal. Delay, congestion, confusion or other evidence of the need for right-of-way assignment must be shown.

04-B

Yellow Change Intervals Timing at the Signalized Intersections

P 1 of 2

As we discussed the following issue need a rather immediate attention and a clear policy direction from the CTCDC, especially in light of the increasing number of the signalized intersections where automated red-light enforcement systems are being used.

The following section of the California Vehicle Code (CVC) requires that the yellow timing at the signalized intersections where such automated systems are used, be established according to the Traffic Manual.

21455.7. (a) At an intersection at which there is an automated enforcement system in operation, the minimum yellow light change interval shall be established in accordance with the Traffic Manual of the Department of Transportation.

However, in referring to the appropriate section of the Traffic Manual, (now the 2003 MUTCD and California Supplement), one reads:

9-04.5 Yellow Change Intervals (Traffic Manual)

The purpose of the yellow signal indication is to warn traffic approaching the signal that the related green movement is ending or that a red indication will be exhibited immediately thereafter and traffic will be required to stop when the red signal is exhibited.

The length of the yellow change interval is dependent upon the speed of approaching traffic. Suggested yellow intervals are shown below are calculated by using the formula as shown in Table 9-1 (below):

Approach Speed	Yellow Interval
mph (km/h)	(seconds)
25 or less (40 or less)	3.0
30 (48)	3.2
35 (56)	3.6
40 (64)	3.9
45 (72)	4.3
50 (80)	4.7
55 (89)	5.0
60 (97)	5.4
65 (105)	5.8

MUTCD 2003, Section 4D.10 Yellow Change and Red Clearance Intervals**Standard:**

A yellow signal indication shall be displayed following every CIRCULAR GREEN or GREEN ARROW signal indication.

The exclusive function of the yellow change interval shall be to warn traffic of an impending change in the right-of-way assignment. The duration of a yellow change interval shall be predetermined.

Guidance:

A yellow change interval should have a duration of approximately 3 to 6 seconds. The longer intervals should be reserved for use on approaches with higher speeds.

Option:

The yellow change interval may be followed by a red clearance interval to provide additional time before conflicting traffic movements, including pedestrians, are released.

Standard:

The duration of a red clearance interval shall be predetermined.

Guidance:

A red clearance interval should have a duration not exceeding 6 seconds.

2003 Edition Page 4D-9

There is no clear and uniform definition of "[Approach Speed](#)". Different jurisdictions use different criteria, and even some jurisdiction use different values within the same municipality for different highways.

The automated devices issue tickets based on the vehicle's encroachment into the intersection for only a fraction of a second after the light has turned red. Such high level of accuracy, clearly is subject to challenge if the yellow change interval is not according to the appropriate "Approach Speed." I am already seeing challenges to these tickets based on this issue.

I believe that the CTCDC needs to address the following two questions, and issue a uniform policy for use throughout California:

1. **What is the "approach speed"; i.e., posted speed limit, 85th percentile speed, etc?**
2. **Should the same "approach speed" be used to establish the minimum yellow change interval for all movements including the left turns? If not, then we need to establish a policy for that as well.**

04-C Neighborhood Traffic Safety Program

P 1 of 3

NEIGHBORHOOD TRAFFIC SAFETY PROGRAM

California Traffic Control Devices Committee (CTCDC) meeting, May 6, 2004

The California Highway Patrol (CHP) was created to provide uniform traffic law enforcement throughout the state. The Neighborhood Traffic Safety Program (NTSP) was developed to improve public safety in specified communities. The CHP, when requested, provides additional resources to communities where driving behaviors and traffic patterns dictate the need.

The NTSP Focus.

- Establish partnerships within communities to promote traffic safety.
- Ensure safe driving through community education and active CHP involvement at local community meetings.
- Publicize the presence of the NTSP partnership through the strategic placement of the NTSP signs, coordinating with local news media to increase awareness, and participating in the development of strategic neighborhood traffic safety plans.
- Program success can be observed by analyzing recent collision data from the Statewide Integrated Traffic Records System (SWITRS) and comparing it to previous year's collision statistics.

Sign Utilization.

- The NTSP signs are to be placed strategically in the communities.
- Individual communities must request of their local counties to provide for the installation and the maintenance of the signs.
- In some instances, these NTSP signs will be placed on roadways that are state routes. State routes fall under the jurisdiction of the Department of Transportation, and therefore, the signs require the authorization of that department.
- The signs publicize the presence of the NTSP partnership within communities.
- They are proactive, which serve as reminders of the increased law enforcement presence and the need to drive cautiously.

CHP MISSION . . .

Ensure safety and provide service to the public as they utilize the highway transportation system and to assist local government during emergencies when requested.

ORGANIZATIONAL VALUES . . .

- Respect for others
- Fairness
- Ethical practices
- Equitable treatment for all

**CHP OBJECTIVES . . .**

- Accident Prevention
- Emergency Incident/Traffic Management
- Law Enforcement
- Service
- Assistance

"SAFETY, SERVICE, AND SECURITY"

"Together we can make California communities a safer community to drive and live."



Want More Information?

Contact us at...

**California Highway Patrol
Community Outreach and
Partnership Section**

2555 First Avenue
Sacramento, Ca 95818
(916) 657-8810

Or find the nearest office at
CHP.CA.GOV

CHP 1042 (CPI 087 - Rev. 06/03)

Neighborhood Traffic Safety Program



A cooperative effort between the California Highway Patrol and the residents of California to promote:

- **Public Safety**
- **Service to the Public**
- **Community Involvement in Traffic Safety**
- **Safety Education**
- **Communication**

What is the neighborhood traffic safety program

The Neighborhood Traffic Safety Program was created in response to community concerns relative to traffic safety.

The program focuses on officers and residents working together, in a cooperative effort to enhance public safety in their communities. Working together, residents and CHP personnel develop a strategic plan to reduce traffic violations and associated motor vehicle collisions. The program involves both education and enforcement, with a simple, but imperative objective; ensure communities are a safe place in which to drive and live.

CHP INVOLVEMENT

The Neighborhood Traffic Safety Program places CHP resources in areas where residents desire and have specifically requested an enhanced law enforcement presence. CHP involvement can include:

- Attendance at neighborhood meetings.
- Traffic safety education.
- Assistance in developing strategic neighborhood traffic safety plans.
- Coordination with the news media to increase public awareness of local traffic safety concerns.
- Enhanced enforcement programs and CHP presence.

COMMUNITY INVOLVEMENT

The Neighborhood Traffic Safety Program is an opportunity for residents to become actively involved in traffic safety and in directing CHP resources and enforcement efforts in their community. Community participation includes:

- Driving safely, defensively, and lawfully.
- Becoming an active participant in the Neighborhood Traffic Safety Program.
- Assist in organizing community meetings to discuss traffic safety.
- Assist in developing strategic neighborhood traffic safety plans.
- Report traffic concerns or specific traffic violations directly to the CHP.



Information Items

04-D Old Driver's Task Force

P 1 of 2

**Older Californian Traffic Safety Task Force****BACKGROUND**

Established in March 2003, the Older Californian Traffic Safety (OCTS) Task Force is a joint project of the California Highway Patrol and the Center for Injury Prevention Policy and Practice at San Diego State University.

CHARGE

The OCTS Task Force is charged with improving traffic safety for older Californians by implementing recommendations from the report, "Traffic Safety Among Older Adults: Recommendations for California" (OATS Report). It also seeks to increase the capacity of law enforcement, aging services, health, transportation and other professionals to implement strategies to improve traffic safety for older adults through education and training, and to increase awareness of the problem of traffic-related injuries among older Californians.

MEMBERSHIP

The OCTS Task Force has a diverse, interdisciplinary membership representing both the public and private sectors. Members include representatives from the Departments of Motor Vehicles, Health Services, Aging, Transportation, Consumer Affairs, and others, as well as AARP, California Council of the Alzheimer's Association, the Automobile Clubs, Commission on Aging, Congress of California Seniors, California Medical Association, California Association for Nurse Practitioners, and many others.

TASK FORCE WORKGROUPS

The OCTS Task Force currently has seven workgroups that are charged with implementing the recommendations from the OATS Report. Workgroups are addressing senior driver policy and public information issues, traffic infrastructure changes, as well as issues within the health care provider, law enforcement, and aging services communities. Workgroups include: Aging Services, Health Services, Law Enforcement, Licensing, Policy & Legislation, Public Information, and Transportation Safety.

TRANSPORTATION SAFETY WORKGROUP

The goal of the Transportation Safety Workgroup is to establish roadway infrastructure and land use practices that promote safety. To accomplish this goal, the workgroup is implementing the following action items from the OATS report: 1) incorporating design features recommended in the Federal Highway Administration (FHWA) Highway Design Handbook on Older Drivers and Pedestrians into Caltrans design manuals; 2) providing training to transportation professionals

P 2 of 2

on this FHWA handbook; and 3) establishing and enhancing pedestrian priority in transportation projects. The workgroup consists of representatives from the Department of Transportation, the Federal Highway Administration, the California Highway Patrol, the Department of Health Services, the Traffic Safety Center at the University of California at Berkeley, and the Office of Traffic Safety.



Funding for the Older Californian Traffic Safety Task Force is provided by a grant from the California Office of Traffic Safety through the Business, Transportation and Housing Agency.